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| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.                | CONFIRMATION NO.       |
|--|-------------|----------------------|------------------------------------|------------------------|
| 10/540,403   | 06/23/2005  | Roger Griffiths      | 21.1066                            | 9606                   |
| 23718 7590 01/08/2008<br>SCHLUMBERGER OILFIELD SERVICES<br>200 GILLINGHAM LANE<br>MD 200-9<br>SUGAR LAND, TX 77478 |             |                      | EXAMINER<br>SAINT SURIN, JACQUES M |                        |
|  |             |                      | ART UNIT<br>2856                   | PAPER NUMBER           |
|  |             |                      | MAIL DATE<br>01/08/2008            | DELIVERY MODE<br>PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/540,403

Applicant(s)

GRIFFITHS ET AL.

Examiner

Jacques M. Saint-Surin

Art Unit

2856

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 10 December 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

### DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/10/07 has been entered.

### *Response to Arguments*

2. Applicant's arguments with respect to claims 1-11 have been considered but are moot in view of the new ground(s) of rejection.

### *Claim Rejections - 35 USC § 102*

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-11 are rejected under 35 U.S.C. 102(e) as being anticipated by Hassan et al. (US PG Pub. No. 20040095847).

5. Regarding claim 1, Hassan discloses a method for determining a velocity of ultrasound propagation in a drilling fluid within a borehole (see: paragraph 0012) of a downhole environment (see paragraph 0031, line 2), comprising: disposing a first

ultrasound transducer (101) adjacent to a second ultrasound transducer (103) such that the front face of the first transducer is offset from the front face of the second ultrasound transducer (see: paragraph 0032) by a predetermined radial offset distance (D) (see paragraph 0032) emitting an ultrasound pulse into the drilling fluid (120) in a borehole (100) using the first ultrasound transducer (101);

detecting the ultrasound pulse (see: paragraph 0034) after the ultrasound pulse has travelled through the drilling fluid (120) a distance (D); and

determining (207) a travel time for the ultrasound pulse to travel the distance (d) through the drilling fluid (120) in the borehole (100) environment between the first and second transducers (101, 103) (see paragraph 0035) ; and

determining the velocity of ultrasound propagation in the drilling fluid (see paragraph 0036) from the distance (d) and the travel time (t) (see: paragraph 0011-0012, 0041).

Regarding claim 2, Hassan discloses the method according to claim 1, wherein the detecting the ultrasound pulse is performed with the first ultrasound transducer (101).

Regarding claim 3, Hassan discloses the method according to claim 1, wherein the detecting the ultrasound pulse is performed with the second ultrasound transducer (103).

Regarding claim 4, Hassan discloses the method according to claim 1, wherein the detecting the ultrasound pulse is performed with both the first and second ultrasound transducer (101, 103, 301a, 303a, see paragraph 0039).

Regarding claim 5, Hassan discloses the method according to claim 4, further comprising determining a borehole diameter ( $D_{bh}$ ) using the predetermined offset distance ( $\Delta D_f$ ) and a difference in travel times ( $T_2 - T_1$ ) for the ultrasound pulse to be detected by the first ultrasound transducer (101) and the second ultrasound transducer (103), (see paragraph 0016).

Regarding claim 6, Hassan discloses the method according to claim 1, wherein the detecting the ultrasound pulse is performed by the first ultrasound transducer (101, 301), and wherein the method further comprises: emitting a second ultrasound pulse into the drilling fluid (120) in the borehole (100) using the second ultrasound transducer (103, 303); and detecting the second ultrasound pulse after the second ultrasound pulse has traveled through the drilling fluid (120) a distance ( $d + 2\Delta D_{sub.f}$ ) (paragraph 0016) using the second ultrasound transducer (303), (see: paragraphs 0041-0043).

Regarding claim 7, Hassan discloses wherein the ultrasound pulse and the second ultrasound pulse are emitted simultaneously (see paragraph 0028).

Regarding claim 8, Hassan discloses the method according to claim 1, wherein the drilling fluid (120) is located in an annulus between a tool (105) and a borehole wall (100)..

Regarding claim 9, it is similar in scope with claim 1 and therefore, it is rejected for the reasons set forth for that claim. Furthermore, Hasman discloses circuitry for controlling a timing of an ultrasound pulse transmitted by the first ultrasound transducer

(101) and for measuring a time lapse between ultrasound transmission and detection after the ultrasound pulse has traveled a distance (d) (see: paragraph 0034).

Regarding claim 10, Hasman discloses the apparatus according to claim 9, wherein the first ultrasound transducer (101) and the second ultrasound transducer (103) are disposed on an outside surface of the tool (105).

Regarding claim 11, Hasman discloses apparatus for determining a velocity of ultrasound propagation in drilling mud, the apparatus comprising: a tool chassis (3) located within a borehole, the chassis (3) is shaped to define a mud channel (34) therein for providing a path through which the drilling mud (see paragraph 0030) is pumped into the borehole (see: paragraphs 0029-0030);

a first and a second ultrasonic transducer (101, 103) located across the mud channel and facing each other spaced at a distance (d) (see: Fig. 1);

circuitry (201) for controlling the first and the second transducers (101, 103) to measure a time lapse between ultrasound transmission and detection after an ultrasound pulse has traveled the distance (d) across the drilling mud (120), and is thereby able to determine the velocity of ultrasound propagation in the drilling mud (see: paragraph 0034, 0040).

### ***Conclusion***


6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jacques M. Saint-Surin whose telephone number is (571) 272-2206. The examiner can normally be reached on Mondays to Fridays between 10:30 A.M and 800 P.M..

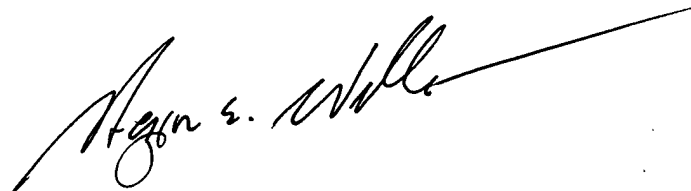
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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams can be reached on (571) 272-2208. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Jacques M. saint-Surin  
December 24, 2007

  
**HEZRON WILLIAMS**  
**SUPERVISORY PATENT EXAMINER**  
**TECHNOLOGY CENTER 2800**